Course: TECH 3303
Title: Introduction to Nanotechnology
Section: 01
Semester: Spring 2013
Class Time: ONLINE

Instructor: Dominick E. Fazarro, Ph.D.
Office: 242
Other Availability: by email or appointment
Phone: 903.565.5911
Email: dfazarro@uttyler.edu
Preferred Contact: N/A

Course Content:
This course covers the overview of the history, manufacturing, and societal applications of nanomaterials. An emphasis will be placed on the ethics, societal impacts, and the future of nanotechnology.

Course Learning Objectives:
Students completing this course should be able to:

- Understand the aspects of nanotechnology through its applications by passing exams with a 70% or better.
- Understand the development of nanotechnology by passing exams with a 70% or better.
- Understand the equipment which is used to develop nanomaterials by passing exams with a 70% or better.
- Understand the health, medicine, agriculture, and business implications of nanotechnology by passing exams with a 70% or better.
- Demonstrate course outcomes by developing a product using nanotechnology with a 70% or better.

Required Textbook
Course Competencies: Listed below.

<table>
<thead>
<tr>
<th>Course Competencies</th>
<th>TECH 3303</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computer-Based Skills</strong> – the student will complete written assignments using the word processor.</td>
<td>X</td>
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<tr>
<td><strong>Communication Skills</strong> – the student will exhibit a mastery of both written and oral skills in completion and presentation of the assigned projects.</td>
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<tr>
<td><strong>Interpersonal Skills</strong> – the student will interact in class discussion to clarify thinking regarding technological progress.</td>
<td>X</td>
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<tr>
<td><strong>Problem Solving (Critical Thinking)</strong> – the student will use conceptual thinking to analyze and make determinations regarding the use of industrial processing equipment.</td>
<td>X</td>
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<tr>
<td><strong>Ethical Issues in Decision Making and Behavior</strong> – the student will gain an appreciation of the ethics of technology through examination of various processing.</td>
<td>X</td>
</tr>
<tr>
<td><strong>Personal Accountability for Achievement</strong> – the student will complete the projects at the time designated by the instructor and will enter into class discussion.</td>
<td>X</td>
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<tr>
<td><strong>Competence in Technology Principles</strong></td>
<td>X</td>
</tr>
<tr>
<td>a. Competence in major field and grounding in other major technology major core areas – the student will gain an appreciation of the benefits and problems of technological growth.</td>
<td></td>
</tr>
<tr>
<td>b. Exposure to and appreciation for industrial experiences such as industrial tours, work-study options and cooperative education, senior seminars – This competency is not addressed in this course.</td>
<td></td>
</tr>
</tbody>
</table>

**Grading Policy and Criteria to Determine Final Course Grade:**

Videos, and guest speakers will be supplemental to the course.

Assignments

- Discussion Board(30pts) (20%) = 150 points possible
- Assignments (20pts) (15%) = 100 points possible
- Exam (1) (100pts) (10%) = 100 points possible
- Exam (2) (100pts) (10%) = 100 points possible
- Exam (3) (100pts) (10%) = 100 points possible
- Final project (200pts) (25%) = 200 points possible

**TOTAL** = 750 POINTS

Please refer to the point accumulation break down for each letter grade:

A = 750-675
B = 674-539
C = 538-377
D = 376-226
F = BELOW 226

**Note:** 89.99999999999999 is still a B.
Course Format
The course involves PowerPoint slides, discussions, case studies, current readings, and YouTube videos. All exams will be multiple-choice and may include other course material not in the textbook. Student responses on the discussion board should have quality content to demonstrate critical-thinking and creativity. For further explanation, see Blackboard Discussions.

Schedule for Semester:

<table>
<thead>
<tr>
<th>Date</th>
<th>No.</th>
<th>Topic/Activity</th>
<th>Reading (Pgs.)/Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 10</td>
<td>1</td>
<td>WELCOME</td>
<td>-</td>
</tr>
<tr>
<td>Jan 11</td>
<td>2</td>
<td>Chapter 1-What is Nanotechnology?</td>
<td>1-26</td>
</tr>
<tr>
<td>Jan 11</td>
<td>2</td>
<td>Assignment</td>
<td>DUE JAN 16</td>
</tr>
<tr>
<td>Jan 21</td>
<td>3</td>
<td>Chapter 2-The Science of Nanotechnology</td>
<td>29-50</td>
</tr>
<tr>
<td>Jan 21</td>
<td>3</td>
<td>Assignment</td>
<td>DUE JAN 28</td>
</tr>
<tr>
<td>Jan 30</td>
<td>4</td>
<td>Chapter 3-The Nanotechnology Toolbox</td>
<td>55-74</td>
</tr>
<tr>
<td>Jan 30</td>
<td>4</td>
<td>Discussion</td>
<td>DUE FEB 5</td>
</tr>
<tr>
<td>Feb 7</td>
<td>-</td>
<td>EXAM 1</td>
<td>DUE FEB 7 AT 11PM</td>
</tr>
<tr>
<td>Feb 11</td>
<td>5</td>
<td>Chapter 4-Carbon Nanotubes, Nanowires, and Nanocrystals</td>
<td>79-100</td>
</tr>
<tr>
<td>Feb 11</td>
<td>5</td>
<td>Discussion</td>
<td>DUE FEB 15</td>
</tr>
<tr>
<td>Feb 19</td>
<td></td>
<td>EXPLANATION OF FINAL PROJECT</td>
<td>-</td>
</tr>
<tr>
<td>Feb 21</td>
<td>6</td>
<td>Chapter 5-Nanotechnology in Medicine and Health</td>
<td>103-120</td>
</tr>
<tr>
<td>Feb 21</td>
<td>6</td>
<td>Assignment</td>
<td>DUE FEB 28</td>
</tr>
<tr>
<td>Mar 4</td>
<td>7</td>
<td>Chapter 6-The Business of Nanotechnology</td>
<td>125-138</td>
</tr>
<tr>
<td>Mar 4</td>
<td>7</td>
<td>Assignment</td>
<td>DUE OCT 26</td>
</tr>
<tr>
<td>MAR 11-15</td>
<td>-</td>
<td>SPRING BREAK</td>
<td>MAR 11-15</td>
</tr>
<tr>
<td>Mar 19</td>
<td>-</td>
<td>EXAM 2</td>
<td>DUE MAR 19 AT 11PM</td>
</tr>
<tr>
<td>Mar 25</td>
<td>8</td>
<td>Chapter 7-Nanotechnology for Food, Agriculture, Livestock, Aquaculture, and Forestry</td>
<td>147-166</td>
</tr>
<tr>
<td>Mar 25</td>
<td>8</td>
<td>Discussion</td>
<td>DUE APR 1</td>
</tr>
<tr>
<td>Mar 28</td>
<td>-</td>
<td>PROGRESS REPORT ON FINAL PROJECT</td>
<td>DUE MAR 31</td>
</tr>
<tr>
<td>Apr 4</td>
<td>9</td>
<td>Chapter 8-Nanotechnology for a Sustainable Environment</td>
<td>169-190</td>
</tr>
<tr>
<td>Apr 4</td>
<td>9</td>
<td>Discussion</td>
<td>DUE APR 11</td>
</tr>
<tr>
<td>Apr 15</td>
<td>10</td>
<td>Chapter 9-Nanotechnology Projects and the United States Government</td>
<td>193-208</td>
</tr>
<tr>
<td>Apr 15</td>
<td>10</td>
<td>Discussion</td>
<td>DUE APR 19</td>
</tr>
<tr>
<td>Apr 23</td>
<td>11</td>
<td>Chapter 10-Colleges and Schools and Nanotechnology</td>
<td>211-232</td>
</tr>
<tr>
<td>Apr 23</td>
<td>11</td>
<td>Assignment</td>
<td>DUE APR 28</td>
</tr>
<tr>
<td>Apr 29</td>
<td></td>
<td>EXAM 3</td>
<td>DUE DEC 6 AT 11PM</td>
</tr>
<tr>
<td>May 8</td>
<td>11</td>
<td>FINAL PRESENTATION UPLOAD</td>
<td>DUE MAY 8TH</td>
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</tbody>
</table>
Using Blackboard for Turning in Assignments (PLEASE READ CAREFULLY!!!!)
Blackboard will be the tool for communication and turning in assignments. **ALL ASSIGNMENTS WILL OPEN UP AT 7AM AND TURNED IN PROMPTLY AT 11PM.** Folders will be created for each assignment to upload your assignments. Each assignment will have a due date. **IF YOU DO NOT MEET THE DUE DATE FOR THE ASSIGNMENT, THE FOLDER WILL DEACTIVATE/DISAPPEAR, THEREFORE, YOU WILL NOT BE ABLE TO TURN IN YOUR ASSIGNMENT TO RECEIVE CREDIT.** The only exception to turn in an assignment after the due date is if you are ill (with a written excuse) or technical difficulties. **IT IS YOUR RESPONSIBILITY TO COMMUNICATE WITH TECHNICAL SERVICES TO RESOLVE YOUR BLACKBOARD MALFUNCTIONS.**

Blackboard Discussions (Please read carefully!!!!!!)
The online course format requires communication between students to stimulate conversation and feedback on the topics. In order to receive credit/points for every discussion posted, **you MUST respond to at least two students.**

Grade Dispute
If you have a disagreement with your final grade, you have **1 week to resolve it.** You must bring all of your assignments when meeting with the instructor.

Final Exam Date:
May 7-11, 2013

Date to Withdraw Without Penalty:
March 25, 2013

Supplies
Flash drive (1G to 4G) to save assignments

Supplemental Resources:

*Journal Articles/Books*


*Websites*
Nanoword.net—http://www.nanoword.net/pages/intro.htm
Nanowerk—http://www.nanowerk.com/nanotechnology/introduction/introduction_to_nanotechnology_1.html
Nanotechnology—http://www.zyvex.com/nano/
Attendance and Make-Up Policy:
Attendance is expected in this course in order to achieve maximum learning for all participants. Unforeseen circumstances do sometimes arise, so periodic absences may occur. If you find that you must miss a class meeting, please contact the instructor prior to the start of class. Please be on time. If you must arrive late, let the instructor know prior to the start of class. Laptops are permitted but the wireless internet card must be disabled during the class. Also, cell phones must be turned off and put away during class.
If a student is sick or have a death in the immediate family, the instructor will discuss the arrangements for turning in make-up work. The student must have written proof too make up an assignment or exam.

Writing Assistance
Each student is entitled to free writing assistance in the Writing Center. Students who take advantage of this service will receive five extra points on essay grades if they take their drafts to the Writing Center. The student must provide documentation that he or she received assistance in the Center. An appointment is strongly advised.

Communication between Instructor and Student
Please allow 1 to 3 days to respond back to you because I have two other courses to teach. Thank you for your patience.

Department Website: www.uttleyer.edu/hrdt

Students Rights and Responsibilities
To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: http://www2.uttleyer.edu/wellness/rightsresponsibilities.php

Grade Replacement/Forgiveness and Census Date Policies
Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttleyer.edu/registrar. Each semester’s Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.
Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions that students need to be aware of. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a “W” grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

**State-Mandated Course Drop Policy**

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

**Disability Services**

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University offers accommodations to students with learning, physical and/or psychiatric disabilities. If you have a disability, including non-visible disabilities such as chronic diseases, learning disabilities, head injury, PTSD or ADHD, or you have a history of modifications or accommodations in a previous educational environment you are encouraged to contact the Student Accessibility and Resources office and schedule an interview with the Accessibility Case Manager/ADA Coordinator, Cynthia Lowery Staples. If you are unsure if the above criteria applies to you, but have questions or concerns please contact the SAR office. For more information or to set up an appointment please visit the SAR office located in the University Center, Room 3150 or call 903.566.7079. You may also send an email to cstaples@uttyler.edu

**Student Absence due to Religious Observance**

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

**Student Absence for University-Sponsored Events and Activities**

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.
Social Security and FERPA Statement:

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation:

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor’s directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

STATEMENT OF AGREEMENT

I (print name) __________________________understand the contents of the syllabus and is responsible for all assignments, tests, and any other activities stated and understand all due dates for assignments, tests, and any other activities in the syllabus for the course TECH 3303 Introduction to Nanotechnology for the Spring semester 2013.

Sign___________________________________________